REMARKS

These remarks are in response to the Office Action dated February 25, 2005. This reply is timely filed. At the time of the Office Action, claims 1-23 were pending in the application. Claims 1-3, 6-12 and 15-23 have been rejected. Claims 4-5 and 13-14 were objected to as being dependent upon a rejected base claim, but are indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The rejections are set out in more detail below.

I. Claim Rejections on the Art

Prior to addressing the Examiners rejections, a brief review of Applicant's invention is appropriate. The invention relates to a compact slotted cylinder antenna, which may be configured to have an omni-directional radiation pattern, a cardioid radiation pattern, or a hybrid of the two. The near field impedance of the antenna is significantly lower than the impedance of human tissue. Accordingly, the antenna can be operated in proximity to a human body without significant coupling between the antenna and the body. In consequence, the risk of harmful side effects on the body due to radio frequency (RF) energy propagated by the antenna is minimized.

The compact slotted cylinder antenna comprises a radiating member and an impedance matching device electrically connected to the radiating member by a conductor. The radiating member, impedance matching device and conductor can be integrally formed from a single conductive sheet. Accordingly, the antenna can be produced at low cost.

Claims 1-3, 6, 9-10, 12, 15 and 17-22 have been rejected under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 4,047,179 to Appelbaum. Claims 1, 10 and 17 each recite, inter alia, a radiating member having a slot extending from a first portion of the radiating member to a second portion of the radiating member. The radiating member is substantially tubular and defines a cavity therein. Appelbaum wholly fails to disclose this limitation. Appelbaum discloses a metallic cover plate 23 having radiating slots 23a and 23b. Col. 3, lines 30-32. However, the cover plate is

NOT substantially tubular, but instead is planar. *See* Figs. 1A and 2. Moreover, the cover plate is a cover placed over a cavity, but does not define the cavity. Instead, the cavity is defined by its own structure 25.

Claims 1 and 17 also recite a conductor operatively connecting the radiating member to an impedance matching device. Although Appelbaum discloses stripline-to-stripline quarter wave impedance transformers (stripline feed stubs 38a, 38b), Col. 3, lines 55-57, Appelbaum fails to disclose a conductor that connects the stripline feed stubs 38a, 38b to the cover plate 23. Indeed, as those skilled in the art will appreciate, such a conductor would defeat the purpose of the stripline feed stubs because the conductor would prevent the feed stubs from properly functioning as feed lines, and thus unsatisfactory for their intended purpose.

Claims 1 and 17 further recite that the impedance matching device, the conductor, and at least a portion of the radiating member are integrally formed from a single conductive sheet. Appelbaum also fails to disclose this limitation. Notwithstanding that Appelbaum does not disclose the recited conductor, Appelbaum's cover plate 23 and stripline feed stubs 38a, 38b are not formed from a single conductive sheet. To the contrary, the stripline feed stubs 38a, 38b are formed as a printed circuit on a dielectric sheet 42I, Col. 3, lines 58-62, while the cover plate 23 is a completely separate structure.

Claim 10 recites that the absolute value of a field impedance associated with the antenna is substantially less than 50 ohms. Similarly, claims 9 and 12 recite that the absolute value of the field impedance is less than 5 ohms. Appelbaum fails to disclose these limitations. Instead, Appelbaum discloses an impedance of 100 ohms, col. 6, lines 40-44, which is twice the magnitude of the impedance recited in claim 10 and twenty times the magnitude of the impedance recited in claim 12. Importantly, an impedance of 100 ohms is closer to the impedance of human tissue than the recited impedances. Accordingly, should Appelbaum's antenna be operated in proximity to human tissue, significantly more electromagnetic coupling will occur in comparison to operating the claimed antenna in the same location. The Examiner makes reference to a variable impedance circuit (10) in Appelbaum, however, Applicant can find no mention

of such a variable impedance circuit anywhere in the reference. Instead, Appelbaum uses the number 10 to identify an aircraft. Col. 2, line 35.

Dependent claims 2 and 19, which depend from claims 1 and 17, respectively, each recite that the non-conductive slot extends along a length of the radiating member. In contrast, Appelbaum's slots 21a, 21b extend along a width of Appelbaum's cover plate. Accordingly, Appelbaum fails to anticipate claims 2 and 19.

Claims 3 and 20 recite that the radiating member and the impedance matching device have a common cross sectional profile. Again, Appelbaum fails to disclose this limitation. In contrast to the claimed limitation, Appelbaum's stripline feed stubs 38a, 38b are stripline elements formed as relatively small printed circuits on a dielectric sheet 42l, col. 3, lines 58-62, while Appelbaum's cover plate 23 is a structure larger than the dielectric sheet itself.

Claims 6 and 15 recite that the impedance device is connected to the second portion of the radiating member. Appelbaum does not even disclose that either of the feed stubs 38a, 38b are connected to the cover plate 23. In fact, as previously noted, such a structure would prevent the feed stubs from properly functioning. Thus, Appelbaum also fails to disclose this limitation.

Claim 18 recites that the single conductive structure recited in claim 17 is formed by a casting process or an extrusion process. Notwithstanding that Appelbaum wholly fails to disclose the recited structure, Appelbaum also completely fails to mention the recited casting process or extrusion process, and thus fails to disclose the recited limitation.

Claim 21 recites an electrostatic shield member having a slot extending from a first end to a second end. The Examiner asserts that Appelbaum discloses a shield member (101) which corresponds to the recited limitation. Applicant respectfully disagrees. Nowhere in his specification does Appelbaum recite an electrostatic shield member. Moreover, Appelbaum does not even have any items identified as 101 in any of the figures.

Claim 22 also was rejected based on Appelbaum. Claim 22 recites that the antenna of claim 1 is arranged to produce a lobed cardioid radiation pattern. The

Examiner has not provided a reason for rejecting claim 22. However, not only does Appelbaum fail to disclose a structure that produces a cardioid radiation pattern, Appelbaum does not even disclose that such a radiation pattern is even possible.

Claim 23 has been rejected under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 4,260,994 to Parker (hereinafter "Parker"). Claim 23 recites a mobile RF communications device comprising a radiation element arranged to produce a lobed cardioid radiation pattern. Parker wholly fails to disclose a mobile RF communications device, and thus fails to anticipate the recited limitation.

Claims 7-8, 11 and 16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Appelbaum. Claims 7 and 16 recite that the impedance matching device comprises a transverse electromagnetic feed (TEM) coupler. Although the Examiner has not rejected claims 7-8, 11 and 16 under U.S. Patent No. 6,034,644 to Okabe et al. (hereinafter "Okabe"), the Examiner nonetheless argues that the teachings of Okabe suggest the recited TEM feed coupler. Applicant respectfully disagrees. Appelbaum and Okabe each completely fails to teach or suggest the recited TEM coupler. Indeed, there is no teaching or suggestion of a TEM coupler anywhere in either of the references.

Claims 8 and 11 recite that the field impedance of the antenna is less than about $0 \pm 2j$ ohms. Again, neither Appelbaum nor Okabe teach or suggest such a limitation. Indeed, Oppelbaum teaches an impedance of 100 ohms. Col. 6, lines 40-45. As noted, should Appelbaum's antenna be operated in proximity to human tissue, significantly more electromagnetic coupling will occur in comparison to operating the claimed antenna in the same location.

IV. Allowable Subject Matter

Claims 4-5 and 13-14 were objected to as being dependent upon a rejected base claim, but are indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, Applicant believes that the base claims are now in condition for allowance, and thus renders the objections moot.

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V. Conclusion

It is believed that all claims are in condition for allowance. Nevertheless, Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicant respectfully requests reconsideration and prompt allowance of the pending claims.

Although no fee is believed due, the Commissioner is hereby authorized to charge any fees which may be due by submission of this document to Deposit Account No. 50-2884.

Respectfully submitted,

5-24-05
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